YELENOVICH, A.S.

GERM.

Hydrophobic cementation of earth for road surfacing Ctl
foundations. A. S. Elenovich. Trudy Saratov. Avtomobil.-
Dorozh. Inst. 1953, No. 12, 38-49, Referat. Zhur., Khim.
1954, No. 41947.—The expts. were carried out with fine
sand, fine sandy loam, and loam-dust chernozem. The
hydrophobization of earth-cement mixt. was done by treat-
ing it with cracking residue dild. with kerosine and with a
bitumen paste. The use of the kerosine-dild. mixt. proved
undesirable since it lowered adhesion and decreasing the d.
and mech. strength of the earth-cement mixt. The use of
bituminous pastes lowered the consumption of cement by
30-40% and at the same time increase the d., strength,
and weather-resistance of the earth-cement mixt. The
phys.-mech. properties of hydrophobic earth-cement were
greatly lowered with increasing vol. of water. For road
building in regions of fine sand, the use of bitumen and tar
pastes is very effective. M. Hosek

YELENOVICH, ALEKSEY SAVEL'YEVICH

YELENOVICH, Aleksey Savel'yevich, dots. kand.tekhn.nauk; NIKITIN, Pavel Ivanovich, inzh.; BYALOBZHESKIY, G.V., red.; KOGAN, F.L., tekhn. red.

[Maintenance and repair of automobile roads] Soderzhanie i remont avtomobil'nykh dorog. Moskva, Nauchno-tekhn. izd-vo avtotransp. lit-ry, 1957. 150 p. (MIRA 11:2)
(Roads--Maintenance and repair)

YELENOVICH, A.S., kand.tekhn.nauk

Characteristics of strengthening some types of soil in the Volga region. Avt.dor. 24 no.6:10-11 Je '61. (MIRA 14:7)
(Soil stabilization) (Volga Valley—Road construction)

YELENOVICH, A.S.; FABRIKANT, M.A.

New binding material from pyrolytic resins. Avt.dor. 26 no.9:
18-19 S '63. (MIRA 16:10)

YELENOVICH, A.S.; MASHIN, K.P.

Use of epoxy resins in the manufacture of road concrete. Plast.massy no.10:61-62 '63. (MIRA 16:10)

SLAVUTSKIY, Aleksandr Kel'manovich, kand. tekhn. nauk, dots.; YELENOVICH, Aleksey Savel'yevich, kand. tekhn. nauk, dots.; KURDENKOV, Boris Ivanovich, inzh.; ROMADANOV, Georgiy Afanas'yevich, kand. tekhn. nauk; Prinimali uchastiye: BRYKALOV, I.I., inzh.; MASHIN, K.P., inzh.; SORCKIN, I.G., inzh.; SHCHERBAKOV, Ye.I., inzh.; IL'INA, L.N., red.

[Road toppings made of local materials] Dorozhnye odezhdy iz mestnykh materialov. Moskva, Transport, 1965. 270 p. (MIRA 18:7)

ACC NR: AP6032543 (A) SOURCE CODE: UR/0413/66/000/017/0167/0167

INVENTOR: Aliyev, V. S.; Al'tman, N. B.; Yelenovich, A. S.; Glazer, M. P.

ORG: none

TITLE: Method of reinforcing sand dunes. Class 84, No. 185765

SOURCE: Izbreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 17, 1966, 167

TOPIC TAGS: road, road construction, lime, resin, sand, sand dune, sand binder

ABSTRACT: An Author Certificate has been issued for a method of reinforcing sand dunes in road construction in deserts by means of binding them at the site. To increase the cohesiveness of sand particles, a milled unslaked lime is introduced into them, followed by an indenealkylated resin, taken appropriately in quantities of 3 and 6—10% of the weight of the sand. [Translation]

SUB CODE: 11/ SUBM DATE: 26Feb64/

Card 1/1 UDC: 624.138.4

YEGOROVA, A.G.; GIMMERVERT, R.V.; LOPASHOVA, Ye.V.; YELENSKAYA, A.N.; LOBANOVA, A.Ya.; KHANZHINA, Ye.B., red.; SHILLING, V.A., red. izd-va; BELOGUROVA, I.A., tekhn. red.

[System of preparing the rye-bread dough in an N.F.Gatilin outfit] Rezhim prigotovleniia testa dlia rzhanogo khleba v agregate N.F.Gatilina. By A.G.Egorova i dr. Leningrad, 1961. 16 p. (Leningradskii Dom nauchno-tekhnicheskoi propagandy. Obmen peredovym opytom. Seriia: Khlebopekarnaia promyshlennost', no.1) (MIRA 14:10)
(Dough) (Baking—Equipment and supplies)

MAYZLIN, Boris Savel'yevich. Prinimal uchastiye YELENSKIY, F.Z.

[Operator of a bridge loader crane] Mashinist mostovogo peregruzhatelia. Moskva, Izd-vo Metallurgiia, 1964. 167 p. (MIRA 17:8)

STEPANENKO, M.A.; MATUSYAK, N.I.; GOGOLEVA, T.Ya.; SALTAN, P.L.; MOROZ, B.N.; TSILENSKIY, F.Z.

Continuous charging in the operation of pitch coke ovens. Koks i khim.no.6: 28-32 '56. (MIRA 9:10)
(Coke ovens)

68-58-3-7/22

AUTHOR: Yelenskiy, F.Z.

TITLE: Factors Influencing an Improvement in the Coke Quality (Faktory, vliyayushchiye na uluchsheniye kachestva koksa)

PERIODICAL: Koks i Khimiya, 1958, Nr 3, pp 29 - 32 (USSR).

ABSTRACT: Factors influencing the coke quality were studied on the above works using four types of coal blend coked under the same conditions. The composition of the blends and the quality of the coke produced are shown in Table 1. In addition the works' data on the quality of coal blends and cokes for the period, 1952-57, was statistically analysed (yearly averages - Table 2). On the basis of the results obtained the following conclusions are drawn. On coking blends containing higher proportions of fat coals, the quality of coke deteriorates. The negative influence of the coal OF from the Dzerzhinskiy Mine on the size distribution of coke was established. On the transporting of coke with a large number of re-loadings, the size fraction above 60 mm is considerably decreased, whereupon fractions below 25 mm increase approximately three times (Table 3). There are 3 tables.

ASSOCIATION: Zaporozhskiy koksokhimicheskiy zavod (Zaporozh'ye Coke Oven Works)

Card 1/1

Sov/68-59-10-7/24

AUTHORS: Eydel'man, A.Ye., Yelenskiy, F.Z., and Klipinitser, T.S.

TITLE: Characteristics of the Size Distribution of Coke

PERIODICAL: Koks i khimiya, 1959, Nr 10, pp 27-30 (USSR)

ABSTRACT: In view of the variability of the size distribution of coke which could not be explained by the coking technology, the accuracy of the determination of the size distribution of coke using mechanised screens with square mesh was investigated. It was established that due to the prismatic structure of coke, screening on square mesh screens does not give a correct picture of the size distribution of coke. About 15% of lumps from the fraction 60-80mm finds its way into the 60-40mm fraction. This value is not constant and depends on the structure of the coke. In parallel determinations of the size distribution of coke, deviations in the +40mm fraction amount to 2.5% while the results for the -40mm fraction were more accurate. In large coke sizes about 36% of all lumps possess the coefficient of "columnarity" (ratio of height to width) of 1.1-1.3 and 33% of 1.3-1.5. There are 4 figures and 4 tables.

ASSOCIATION: Zaporozhskiy koksokhimicheskiy zavod (Zaporozh'ye Coking Works)

Card 1/1

SITALO, M.V.; YELENSKIY, F.Z.

New process for the preparation of slurry for flotation. Koks i khim. no.8:16-17 '60. (MIRA 13:8)

1. Zaporozhskiy koksokhimicheskiy zavod.
(Flotation)

KULESHOV, P.Ye.; YELENSKIY, F.Z.; SITALO, M.V.

Coke from Donets gas coals. Koks i khim. no.12:20-22 '60.
(MIRA 13:12)

1. Zaporozhskiy koksokhimicheskiy zavod.
(Coal—Carbonization) (Coke)

DEKHANOV, N.M., inzh.; KRAVCHENKO, V.A., inzh.; VOLKOV, V.F., inzh.; SEREBRENNIKOV, A.A., inzh.; MORGULEV, S.A., inzh.; KULESHOV, P.Ya., kand.tekhn.nauk; YELENSKIY, F.Z., inzh.

Making 75-perecent ferrosilicon with gas coke. Stal' 21 no.12:1088-1089 D '61. (MIRA 14:12)

(Ferrosilicon--Electrometallurgy)
(Gas industry--By-products)

EYDEL'MAN, A.Ye.; YELENSKIY, F.Z.; BUTUZOV, M.D.

Effect of the size distribution and moisture of the individual classes of coal charges on their bulk weight. Koks i khim. no.2: 3-6 '61. (MIRA 14:2)

1. Zaporozhskiy koksokhimicheskiy zavod.
(Coal preparation)

KULESHOV, P.Ya.; GOLUBCHIK, A.L.; SITALO, M.V.; EYDEL'MAN, A.Ye.; YELENSKIY, F.Z.

New flow sheet for the preparation of coal charges for coking. Koks i khim. no. 3:5-8 '61. (MIRA 14:4)

1. Zaporzhskiy koksokhimicheskiy zavod.
(Coal preparation)

KULESKOV, P.Ya., kand.tekhn.nauk; EYDEL'MAN, A.Ye., kand.tekhn.nauk; GOLYBCHIK, AL., inzh.; YELENSKIY, F.Z., inzh.

Ways of improving the qulaity of blast furnace coke produced by the Zaporozh'ye Coke Industry. Stal' 23 no.1:8-10 Ja '63. (MIRA 16:2)

1. Zaporozhskiy koksokhimicheskiy zavod.
(Zaporozh'ye—Coke industry—Quality control)

KOVALENKO, P.S.; YELENSKIY, F.Z.

Size and strength of metallurgical coke. Koks i khim. no.5:22-26 '63. (MIRA 16:5)

(Coke)

YELENSKIY, F.Z.

Effect of the coking period on the quality of coke. Koks i khim. no.11:26-28 '62. (MIRA 15:12)

1. Zaporozhskiy koksokhimicheskiy zavod.
(Coke--Testing)

GOLUBCHIK, A.L.; YELENSKIY, F.Z.

Coke raw material resources of the Zaporozh'ye Coke and Coal Chemicals Plant. Koks i khim. no.5:12-14 '63. (MIRA 16:5)
(Zaporozh'ye--Coke industry) (Coal--Standards)

YELENSKIY, M.A.

Voltage amplifier on a cathode follower. Prib. i tekh. eksp. 8 no.4:88-89 Jl-Ag '63. (MIRA 16:12)

GOLOGORSKIY, Samuil Davidovich; YELENSKIY, Mikhail Kharitonovich; NAZARENKO, N., red.; GONCHAR, A., red.; ZELENKOVA, Ye., tekhn.red.

[Handbook for making estimates for capital construction] Spravochnoe posobie po sostavleniiu smet na kapital'noe stroitel'stvo. Kiev, Gos.izd-vo lit-ry po stroit. i arkhit. USSR, 1960. 550 p. (MIRA 14:2)
(Building--Estimates)

LUK'YANOV, V.I.; MYSLIN, V.A.; SHNEYEROV, A.I.; KHORKHOT, A.Ya.; YELENSKIY, M.S.; MEL'NIKHOVA, O.M.; PLESHKOV, L.Ye.; ORLOV, V.V.; ZLATOLINSKIY, V.N.; VISHNEVSKIY, F.L.; LAPSHENKOV, P.G.; MAKHOV, M.S.; RUKAVISHNIKOV, I.D.; LYTKIN, K.F.; KOZHEVNIKOV, O.A.; ZORKIN, G.N.; NORMAN, B.B.; TUMANOV, N.S.; SEREBRYANIKOV, S.M.; VOLKOV, N.G.; NOVIKOV, P.G.; FRIDBERG, G.V., inzh., red.izd-va; GELINSON, P.G., tekhn.red.

[Designing chief plans for industrial plants; principal methods] Proektirovanie general'nykh planov promyshlennykh predpriiatii; osnovnye polozheniia. Moskva, Gos.izd-vo lit-ry po stroit., arkhit. i stroit.materialam, 1960. 103 p. (MIRA 13:6)

1. Akademiya stroitel'stva i arkhitektury SSSR. Institut gradostroitel'stva i rayonnoy planirovki. 2. Nauchno-issledovatel'skiy institut gradostroitel'stva Akademii stroitel'stva i arkhitektury USSR (for Khorkhot, Yelenskiy, Mel'nikhova). 3. Gosudarstvennyy institut proyektirovaniya metallurgicheskikh zavodov (Gipromez) (for Pleshkov). (Continued on next card)

YELENSKIY, M.S., kand. arkhit., red.; PAL'GOV, V.I., kand. med. nauk, red.; KOLESNIK, N.S., red.

[Planning and developing of sanitary and protective zones for industrial districts] Planirovka i blagoustroistvo sanitarno-zashchitnykh zon promyshlennykh raionov. Kiev, Gosstroiizdat USSR, 1964. 74 p. (MIRA 17:6)

1. Nauchno-issledovatel'skiy i proyektnyy institut gradostroitel'stva (for Yelenskiy, Pal'gov).

YELENSKIY, M.Ya.

Semiautomatic welding using water steam. Transp. stroi. 10 no.11: 29-31 N '60. (MIRA 13:11)

1. Glavnyy tekhnolog Glavstroymekhanizatsiya.
(Electric welding)

YELENSKIY, M.Ya.

Mechanization of welding at repair and machine enterprises.
Transp.stroi. 12 no.10:27-29 O '62. (MIRA 15:12)

1. Glavnyy tekhnolog Glavstroymekhanizatsii.
(Construction equipment—Welding)

YELENSKIY, S.I.

Safety measures during the drilling of wells by percussion-rope machines. Bezop.truda v prom. 1 no.9:10-13 S '57. (MIRA 10:9)
(Boring) (Mining engineering--Safety measures)

YELENSKIY, S.I., inzh.

Safety measures during blasting in open pits. Bezop.truda v prom. 2 no.3:15-17 Mr '58. (MIRA 11:3)
(Blasting--Safety measures)

YELENSKIY, S.I., inzh.

Increase working safety in the excavation of open pits. Bezop. truda v prom. 2 no.11:9-10 N '58. (MIRA 11:11)

1. Chelyabinskiy okrug Gosgortekhnadzora RSFSR.
(Coal mines and mining—Safety measures)

YELENSKIY, S.I., inzh.

Safety in mine-railroad transportation. Bezop. truda v prom. 3 no.6:15-17 Je '59. (MIRA 12:10)

1. Chelyabinskiy okrug Gosgortekhnadzora RSFSR.
(Ural Mountain region--Mine railroads--Safety measures)

YELENSKIY, S. I.

Safety measures for automotive transportation in pits.
Bezop.truda v prom. 4 no.8:9-10 Ag '60.
(MIRA 13:8)

1. Nachal'nik upravleniya Chelyabinskogo okruga Gosgor-
tekhnadzora RSFSR.
(Chelyabinsk Province—Mine haulage—Safety measures)

YELENSKIY, S.I., inzh.

Prevent accidents in conveyer transportation in open pits. Bezop. truda v prom. 4 no.12:6-7 D '60. (MIRA 14:1)

1. Nachal'nik upravleniya Chelyabinskogo okruga Gosgortekhnadzora RSFSR.

(Mine haulage—Safety measures)

YELENSKIY, S.I., inzh.

Experience of miners of the Magnitogorsk Iron Mine. Bezop. truda v prom. 5 no.6:27-29 Je '61. (MIRA 14:6)
(Magnitogorsk--Iron mines and mining)

YELENSKIY, S.I., gornyy inzh.

Measures for improving the work conditions in deep open-pit mines. Ugol' 37 no.6:57-58 Je '62. (MIRA 15:7)

1. Tekhnicheskoye upravleniye Chelyabinskogo soveta narodnogo khozyaystva.

(Strip mining--Safety measures)

YELENSKIY, B.I., inzh.

Means for reducing accidents in pits. Bezop.truda v prom. 6 no.11: 14-15 N '62. (MIRA 16:2)

1. Tekhnicheskoye upravleniye-Chelyabinskogo soveta narodnogo khozyaystva.
(Ural Mountain Region—Mining engineering—Safety measures)

YELENSKIY, S.I., gornyy inzh.

Precise definition of the safe zone in blasting operations in open pits. Gor. zhur. no.7:20-24 Jl '63. (MIRA 16:8)

1. Yuzhno-Ural'skiy sovet narodnogo khozyaystva.

YELENSKIY, S.I., kand. tekhn. nauk

Causes for traumatism in strip mines. Bezop. truda v prom. 8 no.11:18-19 N '64. (MIRA 18:2)

1. Yuzhno-Ural'skiy sovet narodnogo khozyaystva.

ZURKOV, P.E., doktor tekhn. nauk, prof.; YELENSKIY, S.I., kand. tekhn. nauk; KOTOV, V.N.; KONDRATENKO, V.P.; SOLOV'YEV, P.M.

Book reviews and bibliography. Bezop. truda v prom. 8 no.11: 56-59 N '64. (MIRA 18:2)

1. Magnitogorskiy gornometallurgicheskiy institut im G.N. Nosova (for Zurkov). 2. Nachal'nik otdela tekhniki bezopasnosti Yuzhno-Ural'skogo soveta narodnogo khozyaystva (for Yelenskiy). 3. Nachal'nik Gornogo upravleniya Magnitogorskogo metallurgicheskogo kombinata (for Kotov). 4. Nachal'nik kombinata Chelyabinskugol' (for Kondratenko).

ZURKOV, P.E., prof., doktor tekhn. nauk, zasluzhennyy deyatel' nauki i tekhniki RSFSR; TOGUNOV, Yu.V., dotsent, kand. tekhn. nauk; YELENSKIY, S.I., kand. tekhn. nauk; KONDRATENKO, V.P.; TIKHOVIDOV, A.P., dotsent; RUDNIK, M.I., gornyy inzh.; KORKUNOV, G.S., gornyy inzh.; RACHITSKIKH, L.G., gornyy inzh.; ZAGURAYEV, V.G., gornyy tekhnik

Concerning the book by N.V. Mel'nikov and L.N. Marchenko "Energy of the blast and construction of the charge". Ugol' 39 no.10:62-63 O '64. (MIRA 17:12)

1. Nachal'nik kombinata Chelyabinskugol' (for Kondratenko).
2. Glavnyy inzh. Magnitogorskogo rudnika (for Tikhovodov).
3. Permskiy politekhnicheskiy institut (for Rudnik, Korkunov).
4. Bereznikovskiy sodovyy zavod (for Rachitskikh, Zagurayev).

L 11081-66 EWT(1)/EWA(h)

ACC NR: AP6000561 SOURCE CODE: UR/0109/65/010/012/2167/2176

AUTHOR: Rylov, V. A.; Yelenskiy, V. G.

ORG: none

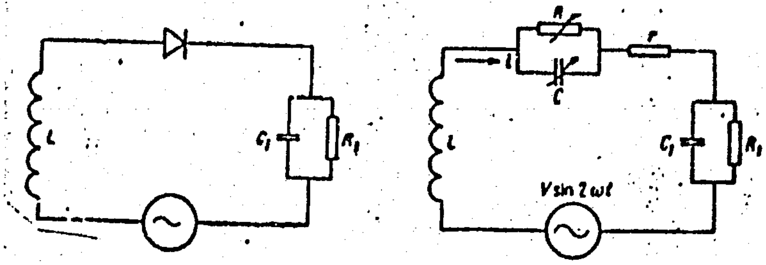
25
24
B

TITLE: Automatic bias and self-modulation in parametric oscillators 25

SOURCE: Radiotekhnika i elektronika, v. 10, no. 12, 1965, 2167-2176

TOPIC TAGS: parametric oscillator, parametron

ABSTRACT: The self-modulation of parametrons which arises with certain relations between circuit parameters in the presence of inertial nonlinearity is an undesirable condition. A third-order differential equation describing the phenomena in the parametron circuit is set up and solved by a method of slowly varying amplitudes. The stability of its stationary solutions is investigated; in the first approximation, the effect of bias on the circuit attenuation and modulation ratio is neglected, and only the effect of bias on the circuit detuning is allowed for.



Self-biased parametron circuit (left) and its equivalent circuit (right)

Card 1/2

UDC: 621.373.93:621.376

2

L 11081-66

ACC NR: AP6000561

A formula is developed for the boundary of the self-modulation region; the effect of RC-filter time constant on self-modulation is studied. In the real semiconductor-diode parametron, the efficiency of self-modulation depends on the pumping amplitude: with a low pumping level, the amplitude characteristics lean leftward like in a constant-bias oscillator; with higher pumping levels, the characteristics lean to the right and the self-modulation begins. Stationary-amplitude-vs.-detuning curves ("amplitude characteristics") and two oscillograms taken from an experimental 100-kc self-modulating parametron are presented. "The authors wish to thank V. V. Migulin for discussing the results and valuable comments." Orig. art. has: 5 figures and 36 formulas.

SUB CODE: 09 / SUBM DATE: 01Jun64 / ORIG REF: 011

Card 2/2

YELENSKIY, V.K.

LAKEYEVA, M.A.; YELENSKIY, V.K.

Simplifying and improving the planning of railroad operations. Zhel.dor.transp. 39 no.9:36-40 S '57. (MIRA 10:10)

1. Nachal'nik planovo-ekonomicheskogo otdela Moskovsko-Kiyevskoy dorogi (for Lakeyeva). 2. Nachal'nik planovo-ekonomicheskogo otdela Vostochno-Sibirskoy dorogi (for Yelenskiy).
(Railroads—Management)

L 07959-67 EWT(m)

ACC NR: AT6031325 SOURCE CODE: UR/3138/66/000/423/0001/0016

35
32
B+1

AUTHOR: Yelenskiy, Ya. S.; Shebanov, V. A.

ORG: none

TITLE: Remarks on the investigation of PI-RHO interactions in heavy liquid bubble chambers 19

SOURCE: USSR. Gosudarstvennyy komitet po ispol'zovaniyu atomnoy energii. Institut teoreticheskoy i eksperimental'noy fiziki. Doklady, no. 423, 1966. Ob izuchenii vzaimodeystviy negativnogo piona s protonom v puzyr'kovoy kamere a tyazheloy zhidkost'yu, 1-16

TOPIC TAGS: hydrogen, proton, electron, PI meson, propane bubble chamber, spark chamber, freon xenon, heavy liquid

ABSTRACT: The correlations between reactions on free hydrogen (n_1) and on bound protons without traces of nuclear fission (n_2) were determined during the study of interactions of π^--mesons with 2.8 Gev/c in a propane-xenon bubble chamber. The difference method was used to determine the proportion of nuclear events ($\alpha_{b.e.} = n_2/n_1+n_2$) of various reactions. Aside from 3000 pictures in

Card 1/2

L 07959-67

ACC NR: AT6031325

3

a propane-xenon bubble chamber, some 3000 photographs were analyzed for this purpose in a freon bubble chamber, and 3000 more in a xenon bubble chamber. If the kinematic selection criterion of hydrogen reactions is not used, the nuclear background $\alpha_{b.c.}$ is 37 to 62%, depending on the type of reaction. The $\alpha_{s.c.}$ magnitudes were also evaluated on the basis of data obtained in the bubble chamber, in view of possible experiments with spark chambers, the electrodes of which contain free hydrogen. It is shown that in the case of thin electrode plates less than 0.2 g/cm^2, the $\alpha_{s.c.}$ is close to the $\alpha_{b.c.}$. In conclusion, the authors express their gratitude to G. A. Leksin, A. G. Meshkovskiy, and V. P. Kanavets, for discussion of the results. Orig. art. has: 5 tables and 1 formula.

SUB CODE: 20, 13, 14, 09/ SUBM DATE: 16Feb66/ ORIG REF: 009/ OTH REF: 005/

Card 2/2 egh

YELENSKIY, Yu.
[redacted]

Determining norms for the number of workers assigned to repairing equipment in nonferrous metallurgy. Biul.nauch.inform.: trud i zar.plata 3 no.9:23-26 '60. (MIRA 13:9)
(Metallurgical plants--Maintenance and repair)

DOTSENKO, Vladimir Yevgen'yevich. Prinimali uchastiye REMEROV, A.A., inzh.; YELENSON, R.V., inzh.; BRAYLOVSKIY, N.G., red.

[Electrical equipment and lighting of railroad cars] Elektricheskoe oborudovanie i osveshchenie vagonov. Moskva, Transport, 1964. 311 p. (MIRA 17:9)

YELEONSKIY, V. M.

F-4

Category : USSR/Magnetism - Diamagnetism. Paramagnetism

Abs Jour : Ref Zhur - Fizika, No 2, 1957, No 4026

Author : Zyryanov, P.S., Yeleonskiy, V.M.
Inst : Ural' Polytechnic Institute, imeni S.M. Kirov, Sverdlovsk, USSR
Title : Collective Description of Magnetic Interactions.

Orig Pub : Fiz. metallov i metallovedeniye, 1956, 2, No 2, 206-214

Abstract : Discussion of the problem of separating the magnetic interactions into collective ones and individual ones ("far" and "near"). A method is described for introducing the collective operator of spin density and is ellustrated with an example in which the Coulomb and dipole-dipole interactions are calculated.

Card : 1/1

Yeleonskiiy, V.M.

B-4

USSR/Theoretical Physics

Abs Jour : Referat Zhur - Fizika, No 5, 1957, No 10858

Author : Yeleonskiiy, V.M., Zyryanov, P.S.
Inst : Ural' Polytechnic Institute
Title : Contribution to the Theory of Collective Motions of Particles in Quantum-Mechanical Systems.

Orig Pub : Fiz. matallon i matallovedeniize, 1956, 2, No 3, 562-563

Abstract : A general method is proposed for separating out the collective motions in a system of many particles by introducing additional variables in the wave function of the system. Upon suitable choice of the variables, one obtains the same Hamiltonians of the collective motion, as obtained by D.N. Zubarev (Referat Zhur Fizika, 1955, 2627), Bohm and Pines (Referat Zhur Fizika, 1955, 7156), and Tomonaga (Referat Zhur Fizika, 1956, 27839, 27840). A method is proposed for separating the collective motion in a system bounded by a surface, for example, volume and surface vibrations in the nucleus.

Card 1/1

YELEONSKIY, V.M.

B-4

Category : USSR/Theoretical Physics - Quantum Mechanics

Abs Jour : Ref Zhur - Fizika, No 2, 1957, No 2936

Author : Zyryanov, P.S., Yeleonskiy, V.M.
Inst : Ural Polytechnic Institute
Title : On the Linearization of the Hartree Equations

Orig Pub : Zh. eksperim. i teor. fiziki, 1956, 30, No 3, 592

Abstract : Explanation of a method for describing the collective interactions, based on the linearization of the Hartree equations about solutions with constant density. The corresponding system of equations and the dispersion relationships resulting from them are written down.

Card : 1/1

ZELEONSKIY, V.A.

Pa - 2964

AUTHOR ELEONSKIY, V.M., ZYRYANOV, P.S.,

TITLE On the Theory of the Collective Motions of Particles in Quantummechanical Systems.
(K teorii kollektivnykh dvizheniy chastits v kvantomekhanicheskikh sistemakh -Russian)

PERIODICAL Zhurnal Eksperim. i Teoret. Fiziki, 1957, Vol 32, Nr 3, pp 515-519, (U.S.S.R.) Reviewed 7/1957
Received 6/1957

ABSTRACT The method of the separating the collective motions in a system discussed in the present paper is simple in-as-much as voluminous apparatus of second-quantization and of unitary transformation are not required. This method is based upon the transformation of the HAMILTONIAN by the introduction of a system of additional variables into the wave functions of the system. Into the wave function $\psi(r_1 \ldots r_N, t)$ describing the state of a system with the HAMILTONIAN $H = \sum p_j^2/2M + (1/2)\sum_{ij} G(\vec{r}_i, \vec{r}_j)$, the authors introduce additional ("surplus") variable functions $\varphi_j(r_j)$ $(j = 1,2 \ldots N)$, which, for the time being remain arbitrary. Instead of ψ, the authors investigate the new wave function (functional of φ_i) $\Phi(r_1 \ldots r_N, \varphi_1(r_1) \ldots \varphi_N(r_N), t)$. The operator $\vec{p}_j$ is to be replaced by the operator $-i\hbar[\nabla_j + (\nabla_j \varphi_i)\partial/\partial\varphi_i]$. Also the share the potential energy can be expressed by the functions $\varphi_j(r_j)$. Next, the functions $\varphi_j(r_j)$ are discussed. By φ_i the coordinates of collective motion can be expressed. The describtion of the collective motions within the system

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On the Theory of the Collective Motions of Particles in Quanummechanical Systems. PA - 2964

will be better, the better the one-particle functions φ_i are selected. Next, several special cases of the selection of φ_i are discussed. The interpretation of $\varphi_j(r_j)$ (wave function of the steady state of the j-th particle in zero-th approximation) used here renders the determination of previously derived HAMILTONIANS possible and shows possible ways for the solution of the boundary problems. The authors first put $\varphi_j(r_j) = N^{-1/2}\exp\{-i\vec{k}\vec{r}_j\}$. This wave function describes the steady state of a free particle with the momentum $\vec{p} = \hbar\vec{k}$. Next, another example for the solution of the boundary problem is dealt with. The special cases of the selection of the functions $\varphi_j(r_j)$ dealt with here permit the generalization of this method for other problems. (No illustrations).

ASSOCIATION Ural Polytechnical Institute
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SUBMITTED 21.1.1956.
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YELEONSKIY, V.M

56-6-51/56

AUTHOR YELEONSKIY, V.M.

TITLE On the Possibility of the Construction of a Chain of Equations for Model Operators.
(O vozmozhnosti postroyeniya tsepochki uravneniy dlya model'nykh operatorov.- Russian)

PERIODICAL Zhurnal Eksperim. i Teoret. Fiziki 1957, Vol 32, Nr 6, pp 1585-1587 (USSR).

ABSTRACT The theory of the model transformations is characterized as follows: The model operator M_n which transforms the model state

$$|\varphi_1 \dots \varphi_n\rangle = \prod_{\gamma=1}^{n} \varphi(\gamma)$$

into the real-state

$|\Psi\rangle = \Psi(1,\dots n)$, is an operator function of all dynamic variables of the system. For the purpose of reducing the multiparticle problem to the singleparticle problem, the author here introduces a sequence of generalized transition amplitudes. The corresponding expressions are explicitly given. Also the system of equations resulting from the assumption that the real and the model state of the system can be described by wave equations, is written down explicitly. This system of

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CARD 2/2 On the Possibility of the Construction of a Chain of Equations for Model Operators.

equations, by the way, is similar to the system of equation for the density matrix; it is specialized here also for the steady case. It is just this system of equations specialized for the stationary case which, together with two more equations given here, determines the single-particle potential U on the surface with constant energy. ($E - \sum_{\alpha} E_{\alpha} = 0$). This system of equations is equivalent to the model transformation $|E\rangle = M_n |E_1 \ldots E_n\rangle$. This statement is intelligible in that case in which a sequence of model-like operators is introduced.
The investigation of the steady transitions to the surfaces of constant energy corresponds to the investigation of such single particle states as satisfy the demand

$\partial_t \langle \varphi_1 \ldots\ldots \varphi_n | \Psi \rangle = 0$. (No illustrations)

ASSOCIATION: Polytechnic Institute, Ural. (Ural'skiy politekhnicheskiy institut.- Russian)

PRESENTED BY: -

SUBMITTED: 21.3. 1957.

AVAILABLE: Library of Congress.

YELEONSKIY, V. M. 56-7-54/66

AUTHOR YELEONSKIY, V.M., SYRYAKOV, P.S.

TITLE On the Application of the Hartree-Fok Equations to a System of Quasiparticles.
(O primenenii uravneniy Khartri-Foka k sisteme kvazichastits-Russian)

PERIODICAL Zhurnal Eksperim. i Teoret.Fiziki,1957, Vol 33, Nr 7,pp 289-291 (USSR)

ABSTRACT The states of a system with many particles which are in strong interaction and are near a certain ground state can be described by an assembly of quasiparticles near the ground state may be looked upon as insignificant and interaction among them may be disregarded.However, in systems with strong "non-ideality" the number of quasiparticles can be rather high, and their mutual interaction must then not be neglected. The present paper descirbes an attempt made to take interaction among quasiparticles into account within the framework of the self-consisting field. For a system, which has an average of N quasiparticles per volume unit, the system of Hartree equations can be written down as follows in dependence of time:

$i\hbar \dot{\Psi}_j = -\frac{\hbar^2}{2m}\Delta \Psi_j + \int G(|\vec{r} - \vec{r}'|)\sum_i |\Psi_i(\vec{r}')|^2 dr' \Psi_j$. Here $G(|\vec{r} - \vec{r}'|)$ denotes the kernel of interaction among the particles. By the substitution $\Psi_j = \varrho_j^{1/2}\exp\{i S_j/h\}$ these equations can be written down in hydrodynamical from: $\dot{S}_j + \frac{1}{2m}(\nabla S_j)^2 + \int G(|\vec{r} - \vec{r}'|)\sum_i \varrho_i(\vec{r}')d\vec{r}' - \frac{\hbar^2}{4m}$

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$\frac{\Delta \sqrt{\varrho_j}}{\varrho_j} = 0$, $\dot{\varrho}_j + \mathrm{div}(\varrho_j \nabla S_j) = 0$. This system permits accurate solution with ϱ_j^0 = const = 1/V and with $S_j^0 = m(\nabla_r \mathcal{E}_j^0)\vec{r} - \mathcal{E}_j^0 t$ + const. (Here V denotes the volume of the system which is here assumed to be equal to 1). The energy spectrum of a system which is nearly in a state with constant density can be determined from the just written down linearized system of equations. A dispersion equation is given, and also the equation resulting from taking the exchange interaction into account. A generalization of the here discussed method consists in the development of a general process for the determination of the quantity $(\nabla_p \mathcal{E})^2$ which occurs in the aforementioned dispersion equation.

(No illustrations)

ASSOCIATION Ural Polytechnical Institute (Ural'skiy politekhnicheskiy institut)

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SOV/126-6-1-24/33

AUTHORS: Yeleonskiy, V. M. and Zyryanov, P. S.

TITLE: On the Possible Effect of Electromagnetic Radiation on Electrical Conductivity of Electron Conductors (O vozmozhnom vliyanii elektromagnitnogo izlucheniya na elektroprovodnost' elektronnykh provodnikov)

PERIODICAL: Fizika Metallov i Metallovedeniye, 1958, Vol 6, Nr 1, pp 171-172 (USSR)

ABSTRACT: The interaction of longitudinal and transverse vibrations in spatially homogeneous electron plasma in conductors is absent in the linear approximation only in the case of spherical symmetry in the electron velocity distribution. If, however, an electric current flows through the conductor, the electron velocity distribution will not be spherically symmetric and this will lead to an interaction between the transverse and longitudinal vibrations of the plasma. In metals, electron vibrations cannot be excited by thermal motion since the energy of a quantum of such vibrations $h w_0$ is large compared with the energy of thermal motion (kT). However, if the metallic specimen is irradiated with light whose frequency w is greater than w_0 then the

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transverse field in the specimen will excite longitudinal vibrations of the plasma. The scattering of conduction electrons on these longitudinal vibrations will lead to an increase in the electrical resistance. The calculations reported in the present paper are concerned with the existence of such an effect. It is shown that in some cases the interaction between the longitudinal and transverse fields does take place. A quantitative estimate of the effect of electromagnetic radiation upon the electrical conductivity of a conductor will be given in a future publication.

ASSOCIATION: Ural'skiy politekhnicheskiy institut imeni S.M.Kirova (Ural Polytechnical Institute imeni S. M. Kirov.

SUBMITTED: March 26, 1957

1. Conductors--Electrical properties 2. Light--Electrical effects 3. Electrons--Vibration

Card 2/2

AUTHORS: Yeleonskiy, V. M. and Zyryanov, P. S. SOV/126-6-3-31/32

TITLE: On Fluctuations in Spin Density in an Electron Plasma (O fluktuatsiyakh spinovoy plotnosti v elektronnoy plazme)

PERIODICAL: Fizika Metallov i Metallovedeniye, 1958, Vol 6, Nr 3, pp 573-575 (USSR)

ABSTRACT: Fluctuations in the spin density in a system of interacting electrons are due to magnetic (spin-spin and spin-orbital) as well as exchange Coulomb interactions. The presence of these fluctuations leads to the appearance of electromagnetic fluctuation fields which have an effect upon the physical properties of the system (electrical conductivity, specific heat, etc.) These interactions may be taken into account by a method analogous to that given in (Ref.1), using Pauli's equations. It is shown that interactions associated with spin have only an effect upon the spectrum of transverse vibrations. From the dispersion equations for fluctuations in the spin density, Eqs.(2) and (3), it follows that fluctuations of spin density cannot have a very great effect on physical properties of metals, since these fluctuations are not excitable by thermal motion or are small compared with the usual elastic vibrations. There are

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On Fluctuations in Spin Density in an Electron Plasma SOV/126-6-3-31/32

2 Soviet and 1 English references.

ASSOCIATION: Ural'skiy politekhnicheskiy institut imeni S. M. Kirova (Ural Polytechnical Institute, im. S. M. Kirov)

SUBMITTED: March 25, 1957.

1. Metals--Physical properties 2. Electron gas--Density 3. Nuclear spins 4. Mathematics--Applications

Card 2/2

AUTHORS: Yeleonskiy, V. M., Zyryanov, P. S. SOV/56-34-3-48/55

TITLE: The Energy-Spectrum of a Bose-Gas (Energeticheskiy spektr Bozevskogo gaza)

PERIODICAL: Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, 1958, Vol. 34, Nr 3, pp. 770 - 772 (USSR)

ABSTRACT: The present report investigates the problem of the determination of the energy-spectrum of a system of Bose-particles by development of the interaction kernel into a series with respect to the moments. This method is in some cases more convenient than the method of development of the interaction kernel in a Fourier's series. The Hamiltonian of the system has the form

$$H = (\hbar^2/2m)\int \nabla\psi^* \nabla\psi \, d\vec{r} + (1/2)\int \varrho(\vec{r})G(\vec{r}-\vec{r}\,')\varrho(\vec{r}\,')d\vec{r}d\vec{r}\,'$$

in the representation of the second quantization, where $\varrho(\vec{r}) = \psi^*(\vec{r})\psi(\vec{r})$. The operator of the potential energy is reduced to the form

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$(1/2)\int \varrho(\vec{r})G(\xi)\varrho(\vec{r}-\vec{\xi})d\vec{r}\,d\vec{\xi}$ by introduction of the new variable $\xi = r - r'$. The Hamiltonian is still further transformed and subsequently written down in a form which is accurate up to the square terms with respect to the operators. After diagonalization this square form leads for the central forces to the following eigenvalues of the energy:

$$E_k = \left\{\left(\frac{\hbar^2 k^2}{2m}\right)\left[\frac{\hbar^2 k^2}{2m} + 4\pi\varrho\sum_{\ell=0}^{\infty}\frac{(-1)^{\ell}}{(2\ell+1)!}k^{2\ell}\int_0^{\infty}G(\xi)\,\xi^{2\ell+2}d\xi\right]\right\}^{1/2}$$

With absolutely solid spheric particles with the diameter a the authors put $G(\xi) = (\hbar^2/ma^2)\,\delta(\xi - a)$ under the condition of repulsive forces and then the above-mentioned equation for E_k furnishes the results obtained by K. A. Brueckner and K. Sawada (Reference 1):

$$E(x) = \left(\frac{\hbar^2}{2ma^2}\right)x\left[x^2 + 2\lambda^2\frac{\sin x}{x}\right]^{1/2}.$$

Here : $x = ka$, $\lambda^2 = 8\pi\varrho a^3$. The weak attractive forces between the helium-atoms were not taken into account in 2 previous works dealing with the same subject (References

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1, 2). They can be easily taken into consideration in the simplest case if the potential of the attractive forces is still added to the above-mentioned term for $G(\xi)$. The authors apply here the term

$G(\xi) = (\hbar^2/ma^2)\,\delta(\xi - a) - U_0\,\eta(\xi)$, where $\eta(\xi) = \begin{cases} 0, \xi < a \\ 1, a < \xi < b \\ 0, \xi > b. \end{cases}$

In this case U_0 denotes the depth of the potential-pot and $b - a = d$ is its width. If the binding energy corresponding to one He^4-atom (at a temperature near to absolute zero) is known, a correlation between the binding energy, the width and the depth of the potential-pot can be determined by using the known results of quantum mechanics. Then, only one parameter occurs in the energy spectrum of the system (apart from ϱ and a). The formulae for the correlation and for the corresponding energy spectrum are written down here. There are 3 references, 1 of which is Soviet.

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The Energy-Spectrum of a Bose-Gas

ASSOCIATION: Ural'skiy politekhnicheskiy institut
(Ural Polytechnical Institute)

SUBMITTED: December 6, 1957

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YELNONSKIY, V.M., Cand Phys-Math Sci (diss) -- "On the theory of collective motions in quantum systems." Sverdlovsk, 1959. 7 pp (Min of Higher Education USSR. Ural State U im A.M. Gor'kiy), 120 copies. Bibliography: p 7 (16 titles) (KL, 27-59, 118)

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SOV/139-58-6-24/29

AUTHORS: Yeleonskiy, V.M. and Zyryanov, P.S.

TITLE: On the Theory of the Energy Spectrum of Systems of Interacting Particles (K teorii energeticheskogo spektra sistem vzaimodeystvuyushchikh chastits)

PERIODICAL: Izvestiya Vysshikh Uchebnykh Zavedeniy, Fizika, 1959, Nr 6, pp 152-157 (USSR)

ABSTRACT: In systems consisting of a large number of interacting particles each particle interacts with a large number of other particles provided the density is sufficiently high. In the so called collective interactions, continuous medium properties appear. However, not all the properties of a system consisting of discrete particles can be approximated by the properties of a continuous medium. The discreteness of the system will appear in processes which take place in small spatial regions which are of the order of the inter-particle distance. Hartree-Fock equations may be used to describe quantum mechanically such collective interactions and a generalised form of these equations covering non-stationary states is given by Eq (1).

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The plus sign applies to bosons and the minus sign to fermions. Recently, these equations have been used both in nuclear theory and the theory of metals (Ref 3). It follows from Eq (1) that the density matrix is given by Eq (2). The discrete properties of the system can be described in terms of the scattering problem formalism. One of the properties of the non-linear Eq (1) is that they have solutions in the form of plane waves, i.e. they have a solution corresponding to a constant density of particles in the system. It follows that states of the system in which the density is almost constant may be described by means of linearised equations of the form (1) in the neighbourhood of solutions with constant density. The present paper is concerned with setting up the dispersion equations for a system of interacting particles having small density fluctuations. For this purpose instead of the complex functions $\psi_j(xt)$ real functions are introduced by putting $\psi_j = \rho_j^{1/2}(xt)e^{iSj(xt)h^{-1}}$. The functions

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ρ_j and S_j are then found to be given by Eq (3). Linearisation of the equations in the neighbourhood of exact solutions:

$$S_j = S_{oj} = -E_{oj}t + p_j x, \quad \nabla S_{oj} = p_{oj} = mV_{oj},$$

$$\rho_j = \rho_{oj} = \text{const} = \frac{1}{V} = 1$$

leads to the system of Eq (4). These relations are then used to obtain dispersion equations for boson and fermion systems (Eq 6 and 12 respectively). There are 7 references of which 5 are Soviet and 2 English.

ASSOCIATION: Ural'skiy Politekhnicheskiy Institut imeni S.M.Kirova (Ural Polytechnical Institute imeni S.M.Kirov)

SUBMITTED: 20th January 1958

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S/139/61/000/004/006/023
E032/E314

AUTHOR: ~~Yeleonskiy, V.M.~~

TITLE: On the scattering of a charged particle in a uniform magnetic field by a central potential

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Fizika, no. 4, 1961, 30 - 36

TEXT: This paper is concerned with the analysis of the Born approximation for the problem of scattering of a charged particle by a central potential in a uniform magnetic field. It is assumed that the process is determined by the value of the matrix element of the scattering potential taken over the eigen states of the particle in the magnetic field. A similar analysis has been reported by L. Tannenwald (Ref. 2: Phys. Rev., 113, 1396, 1959). However, the latter author did not use the Landau representation and based his theory on a representation associated with the symmetric form of the vector potential. In distinction to Ref. 2, the present author shows that it is possible to derive an explicit expression for the transition matrix element between eigen states of a particle in a magnetic field both

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for a Coulomb and a screened Yukawa potential. The expression involves well-known transcendental functions. It is claimed that this analysis casts some doubt on the correctness of the corresponding results in Ref. 2. Acknowledgments are expressed to P.S. Zyryanov and V.P. Silin for their interest and suggestions.

There are 7 references: 4 Soviet-bloc (one of which is a translation from a non-Soviet-bloc publication) and 3 non-Soviet-bloc. The English-language references mentioned are:
Ref. 2: quoted in text; Ref. 4: B. Lipmann, J. Schwinger, Phys. Rev., 79, 469, 1950; Ref. 5: Erdelyi, Magnus, Oberbettinger, Tricomi, Higher Transcendental Functions McGraw-Hill, 1, 1953.

ASSOCIATION: Ural'skiy politekhnicheskiy institut imeni S.M. Kirova (Ural Polytechnical Institute imeni S.M. Kirov)

SUBMITTED: July 5, 1960

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24483
S/126/61/011/006/009/011
E032/E314

AUTHORS: Yeleonskiy, V.M., Zyryanov, P.S. and Silin, V.P.

TITLE: The Collision Integral for Charged Particles in a Magnetic Field

PERIODICAL: Fizika metallov i metallovedeniye, 1961, Vol. 11, No. 6, pp. 955 - 957

TEXT: The present note is concerned with the derivation of the collision integral for charged non-relativistic particles in a magnetic field. Results are given for the scattering of charged particles by each other and for the scattering of electrons by fixed impurities. The matrix element for the scattering of particles λ and β by each other is

$$\int (dq)\, 4\pi e_\lambda e_\beta \frac{\langle \lambda' | e^{iqr} | \lambda \rangle \langle \gamma' | e^{-iqr} | \gamma \rangle}{q_i q_j \varepsilon_{ij} \left[(E'_\lambda - E_\lambda)/\hbar, q \right]}, \quad (1)$$

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where $|\lambda\rangle$, $|\lambda'\rangle$ are the states of the particle λ before and after scattering. The wave function representing a charged particle in the magnetic field is then taken in the form (Landau representation)

$$|\lambda\rangle \equiv |k_x^{\lambda}, k_z^{\lambda}, n_{\lambda}\rangle = (4\pi^2 a_{\lambda})^{-1} \exp\{ik_x^{\lambda} x + ik_z^{\lambda} z\} \times \times \Phi_n [(y + a_{\lambda}^2 k_x^{\lambda})/a_{\lambda}], \quad (2)$$

where $\alpha_{\lambda}^2 = ch(|e_{\lambda}|B)^{-1}$ and $\Phi_n(x)$ is the normalised oscillator wave function. Eqs. (1) and (2) can then be used to show that the collision integral is

$$I(f_\lambda) = \sum_{\beta,\, n'_\beta,\, n_\beta,\, n'_\lambda} (2\pi)^{-6} \int dk_x'^{\lambda}\, dk_x'^{\beta}\, dk_x^{\beta}\, dk_z'^{\lambda}\, dk_z'^{\beta}\, dk_z^{\beta}\, \delta\left[h\omega_\beta + h\omega_x\right] \times$$

$$\times\, \delta\left[\Delta k_z^{\lambda} + \Delta k_z^{\beta}\right] \delta\left[\Delta k_x^{\lambda} + \Delta k_x^{\beta}\right] \frac{2\pi}{h}$$

$$\left| \int \frac{4\pi e_\lambda e_\beta\, dq F_{n'_\lambda n_\lambda}\left[q, \Delta k_x^{\lambda}, k_x'^{\lambda}\right] F_{n'_\beta n_\beta}\left[-q, \Delta k_x^{\beta}, k_x'^{\beta}\right]}{\left[q^2 + (\Delta k_x^{\lambda})^2 + (\Delta k_z^{\lambda})^2\right] \varepsilon \left[\omega_\lambda, \Delta k_z^{\lambda}, q^2 + (\Delta k_x^{\lambda})^2\right]} \right|^2 \times \qquad (3)$$

$$\{f(\lambda')f(\beta') - f(\lambda)f(\beta)\},$$

where

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$$\hbar\omega_\lambda = E'_\lambda - E_\lambda,\; E_\lambda = (\hbar k_z^\lambda)^2/2\mu_\lambda + \frac{|e_\lambda|B}{\mu_\lambda c}(n_\lambda + 1/2),\; \Delta k = k' - k,$$

$$F_{n'n}[q, \Delta k_x, k'_x] = (n'!\,n!)^{-1/2}\left(\left[\Delta k_x^2 + q^2\right]^{1/2} a/\sqrt{2}\right)^{n'-n} \times$$
$$\times \exp\left\{-\left[\Delta k_x^2 + q^2\right] a^2/4\right\} L_n^{n'-n}\left(\left[\Delta k_x^2 + q^2\right] a^2/2\right) \times$$
$$\times \exp\left\{-i a^2 q k'_x + i a^2 \Delta k_x q/2 + i(n - n')\left[\arcsin \Delta k_x \left[\Delta k_x^2 + q^2\right]^{-1/2} - \pi/2\right]\right\},$$

$$L_n^{n'-n}(x) = x^{n-n'} e^x \frac{d^n}{dx^n}(x^{n'} e^{-x}).$$

In Eq. (3) $\varepsilon(\omega, q_z, q_\perp)$ is defined by $q_i q_j \varepsilon_{ij}(\omega, q) = (q_\perp^2 + q_z^2)\varepsilon(\omega, q_z, q_\perp)$. According to Zyryanov, P.S. (Ref. 3: ZhETF) for spatial uniform distributions of particles of type β

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$$\varepsilon(\omega, q_z q_\perp) = 1 - \frac{4\pi}{q_z^2 + q_\perp^2} \lim_{\gamma \to 0} \sum_{\beta, n_\beta, n'_\beta} \frac{g_\beta e_\beta^2}{(2\pi a_\beta)^2} \left| F_{n'_\beta, n_\beta}(a_\beta^2 q_\perp^2 / 2) \right|^2 \times$$

$$\times \int dk_z \frac{f(\beta') - f(\beta)}{E'_\beta - E_\beta + \hbar\omega - i\hbar\gamma},$$

where $f(\beta)$ is the distribution function,

$g_\beta = 2s_\beta + 1$ and

s_β is the spin of the particles of type β.

In the case of scattering of electrons by fixed charged impurities of a given type, which are uniformly distributed in space with a density n_0, the collision integral becomes

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$$I(f_\gamma) = \sum_{n'} (2\pi)^{-2} \int dk'_x dk'_z dq \frac{2\pi}{h} \delta(E'_\gamma - E_\gamma) \times$$
$$\times (4\pi eQ)^2 n_0 \left| F_{nn'}\left([\Delta k_x^2 + q^2] a^2/2 \right) \right|^2 [q^2 + \Delta k_x^2 +$$
$$+ \Delta k_z^2]^2 \varepsilon^2 [0, \Delta k_z, \Delta k_x^2 + q^2] \{ f(\gamma') - f(\gamma) \}, \qquad (4)$$

where Q is the charge of the impurity. Since the energy of the electron is conserved when it is cattered by the impurity, one can put $\omega = 0$ in $\varepsilon(\omega, q)$. In the quasi-classical approximation the asymptotic form of the function $|F_{n,n'}(x)|^2$ for large n is

$$|F_{n,n'}(x)|^2 = J^2_{n'-n}\left[(2x(n' + n + 1))^{1/2}\right] \qquad (5)$$

where $J^2_{n'-n}(x)$ is the square of the Bessel function of order n' - n . Detailed analysis of Eqs. (3) and (4) will be given in another paper. Other information related to the present topic is given by V.P. Silin (Ref. 1: ZhETF, Ref. 2: FMM) and Zyryanov, P.S. (Ref. 3). The results reported in the present note were obtained while the present authors attended the Theoretical Physics Winter School at Kourovka. S.V. Vonsovskiy is thanked for inviting the authors to that school. There are 3 Soviet references.

ASSOCIATIONS: Ural'skiy politekhnicheskiy institut (Ural Polytechnical Institute)
Fizicheskiy institut im. P.N. Lebedeva (Physics Institute im. P.N. Lebedev)

SUBMITTED: February 4, 1961

YELECNSKIY, V.M.

Excitation spectrum of a particle system in an external field.
Zhur. eksp. i teor. fiz. 40 no.4:1143-1147 Ap '61. (MIRA 14:7)

1. Ural'skiy politekhnicheskiy institut.
(Quantum electrodynamics) (Magnetic fields)

YELEONSKIY, V.M. (Sverdlovsk); POLYAK, Yu.Ya. (Sverdlovsk)

Heating of electrons in a moving plasma. PMTF no.5:48-51 S-O '62. (MIRA 16:1)

(Plasma (Ionized gases)) (Electrons)

YELEONSKIY, V.M.; ZYRYANOV, P.S.; SKROTSKIY, G.V.; SOLOV'YEV, G.V.

Theory of the complex electric permeability of weak electrolytes. Zhur. fiz. khim. 36 no.3:625-628 Mr '62. (MIRA 17:8)

1. Ural'skiy politekhnicheskiy institut imeni Kirova.

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S/056/62/042/003/041/049
B108/B102

24.6712

AUTHORS: Yeleonskiy, V. M., Zyryanov, P. S., Silin, V. P.

TITLE: Collision integral for charged particles in a magnetic field

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 42, no. 3, 1962, 896-904

TEXT: The collision integral for charged particles in a strong magnetic field $\vec{B}$ is derived. The particles are assumed to undergo Coulomb interaction. Polarization of the medium and quantum effects are taken into account. For non-uniform particle distribution in the y direction, the collision integral for two sorts of particles, α and β, has the general form

$$I[f_\alpha(n_\alpha, p_z^\alpha, y_0^\alpha)] = \sum_{\beta n'_\alpha n_\beta n'_\beta} (2\pi\hbar)^{-3} \int dp_z'^\alpha dp_z'^\beta dp_z^\beta \hbar\delta(p_z^\alpha + p_z^\beta - p_z'^\alpha - p_z'^\beta) \times$$

$$\times (2\pi\hbar)^{-3} \int dp_x'^\alpha dp_x'^\beta dp_x^\beta \hbar\delta(p_x^\alpha + p_x^\beta - p_x'^\alpha - p_x'^\beta)\, \delta[E_\alpha(\nu'_\alpha) + E_\beta(\nu'_\beta) -$$

$$- E_\alpha(\nu_\alpha) - E_\beta(\nu_\beta)] \frac{2\pi}{\hbar} \left| \int dk_y dk'_y 4\pi e_\alpha e_\beta A_0^{-1} \left(\frac{E_\alpha(\nu'_\alpha) - E_\alpha(\nu_\alpha)}{\hbar}, \frac{p_x'^\alpha - p_x^\alpha}{\hbar}, \right.\right.$$

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$$\frac{p_z'^{\alpha} - p_z^{\alpha}}{\hbar};\ k_y,\ k_y'\Big)\exp\Big\{+\frac{i}{2}k_y(y_0^{\alpha} + y_0^{\alpha'}) - \frac{i}{2}k_y'(y_0^{\beta} + y_0'^{\beta}) -$$

$$-\frac{1}{2}|X_{\alpha}|^2 - \frac{1}{2}|X_{\beta}'|^2\Big\}\frac{\bar{n}_{\alpha}!}{\sqrt{n_{\alpha}'!\,n_{\alpha}!}}L_{\bar{n}_{\alpha}}^{|n_{\alpha}'-n_{\alpha}|}(|X_{\alpha}|^2)\frac{\bar{n}_{\beta}!}{\sqrt{n_{\beta}'!\,n_{\beta}!}}L_{\bar{n}_{\beta}}^{|n_{\beta}'-n_{\beta}|}(|X_{\beta}'|^2)\times \quad (11).$$

$$\times X_{\alpha}^{|n_{\alpha}'-n_{\alpha}|}X_{\beta}'^{|n_{\beta}'-n_{\beta}|}\Big|^2\{f_{\alpha}(n_{\alpha}', p_z'^{\alpha}, y_0'^{\alpha})f_{\beta}(n_{\beta}', p_z'^{\beta}, y_0'^{\beta}) -$$

$$- f_{\alpha}(n_{\alpha}, p_z^{\alpha}, y_0^{\alpha})f_{\beta}(n_{\beta}, p_z^{\beta}, y_0^{\beta})\}.$$

$$X_{\beta}' = \sqrt{\frac{c\hbar}{2|e_{\beta}'|B}}\Big[\frac{|e_{\beta}|B}{c\hbar}(y_0^{\beta} - y_0'^{\beta})\,\mathrm{sign}\,(n_{\beta}' - n_{\beta}) - ik_y'\Big].$$

The L's are Laguerre polynomials. The term A^{-1} implies the tensor of complex dielectric constant involving both frequency and spatial dispersion. Consequently, this collision integral accounts also for screening owing to polarization of the medium. From the above collision integral another is derived for a distribution function depending on the

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Collision integral for charged ... S/056/62/042/003/041/049
B108/B102

longitudinal and transverse momenta as well as on the y components of the Larmor radii. There are 8 references: 6 Soviet and 2 non-Soviet. The two references to English-language publications read as follows: N. Rostoker. Phys. of Fluids, 3, 922, 1960; Higher Transcendental Functions, 2, N.-Y., 1953, p. 199.

ASSOCIATION: Institut fiziki metallov Akademii nauk SSSR (Institute of Physics of Metals of the Academy of Sciences USSR)

SUBMITTED: October 30, 1961

Card 3/3

S/207/63/000/001/003/028
E032/E114

AUTHORS: Yeleonskiy, V.M., and Zhdanov, V.M. (Sverdlovsk)

TITLE: On the hydrodynamic approximation for an ionised gas in a strong electric field

PERIODICAL: Zhurnal prikladnoy mekhaniki i tekhnicheskoy fiziki, no.1, 1963, 26-31

TEXT: The present analysis is based on an expansion for the distribution function which is of the form

$$f = \left\{ 1 + a_\alpha \frac{\partial}{\partial v_\alpha} + a_{\alpha\beta} \frac{\partial^2}{\partial v_\alpha \partial v_\beta} + a_{\alpha\beta\gamma} \frac{\partial^3}{\partial v_\alpha \partial v_\beta \partial v_\gamma} + \dots \right\} f_o \qquad (2)$$

The hydrodynamic approximation is obtained by retaining only the first few terms in this expansion. The expansion coefficients can be expressed in terms of the moments of the distribution function and the first moments correspond to density, average velocity, stress tensor and thermal particle flux. It is assumed that the distribution function for the ground state depends only on the modulus of the particle velocity. A finite number of terms is taken in Eq.(2) so that its final form is

$$f = \left\{ 1 - u_\alpha \frac{\partial}{\partial v_\alpha} + \frac{1}{2} \frac{\pi_{\alpha\beta}}{\rho} \frac{\partial^2}{\partial v_\alpha \partial v_\beta} - \frac{1}{5} \frac{h_\alpha}{\rho} \frac{\partial}{\partial v_\alpha} \Delta \right\} f_o \tag{3}$$

where f_o need not be the Maxwell distribution function. The transport equation for the electrons in a partially ionised gas is then considered with electron collisions neglected. Electron ion collisions are discussed in terms of the Fokker-Plank approximation. It is shown that the moments in the above expansion satisfy a closed system of equations which, in addition to the hydrodynamic variables, include the relaxation times for these variables which can be determined with the aid of the ground state distribution function f_o. A transport equation for f_o is then derived. The system of equations for the moments and the equation for f_o turn out to be self-consistent. The relaxation times are defined for an arbitrary ground-state distribution, while the usual approach is to assume the Maxwellian form for f_o. Thus the present analysis can be used to develop a systematic hydrodynamic description of an ionised gas in a strong external field even when the ground state distribution function is not Maxwellian. The paper is concluded with estimates of the contribution to the relaxation times which is due to electron-electron collisions.

SUBMITTED: October 19, 1962

POLYAK, Yu.Ya.; YELEONSKIY, V.M.

Effect of collisions on the excitation spectrum of a system of electrons. Zhur. eksp. i teor. fiz. 45 no.2:159-163 Ag '63. (MIRA 16:9)

1. Ural'skiy filial AN SSSR.
(Collisions (Nuclear physics)) (Electrons--Spectra)

YELEONSKY, V.M. (Sverdlovsk):

"Dielectric permeability of slightly turbulent plasma."

report presented at the 2nd All-Union Congress on Theoretical and Applied Mechanics, Moscow, 29 Jan - 5 Feb 64.

TITLE: Conductivity of a turbulent plasma in the magnetohydrodynamic approximation

SOURCE: Atomnaya energiya, v. 17, no. 2, 1964, 141-142

TOPIC TAGS: turbulent plasma conductivity, magnetohydrodynamics, plasma dielectric permittivity, plasma inhomogeneity

ABSTRACT: [illegible]

Card 1/2

ACCESSION NR. AP4043989

SUBMITTED: 15Apr63 ENCL: 00

SUB CODE: ME NO REF SOV 000 OTHER 002

L 31814-66 EWT(1)/T RO/JK

ACC NR: AP6021673 SOURCE CODE: UR/0079/66/036/003/0453/0457

AUTHOR: Mel'nikov, N. N.; Khaskin, B. A.; Yelopina, L. T.

63
58
B

ORG: none

TITLE: Organic insectofungicides. XCIII. Reaction of esters of phosphoric acid with higher aliphatic amines

SOURCE: Zhurnal obshchey khimii, v. 36, no. 3, 1966, 453-457

TOPIC TAGS: insecticide, fungicide, phosphoric acid, ester, amine, chemical synthesis, ammonium salt, bactericide, nonmetallic organic derivative

ABSTRACT: The reaction of phosphoric acid esters with higher aliphatic amines and diamines was used to synthesize 16 substituted ammonium salts, which have not been described in the literature. The herbicidal and germistatic action of the synthesized compounds was studied on a large number of different microorganisms. The compounds obtained were found to possess high, broad-spectrum microbiological activity. In concentrations of $1.25.10^{-2}$ to 1.10^{-4}%, they were active against Staphylococcus, Streptococcus, and coli, typhoid fever, dysentery, diphtheria, pyocyanic, and spore-bearing bacteria. The bactericidal activity of phosphoric acid derivatives is two to three times higher than that of N-substituted ammonium dialkyldithio-

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L 31814-66

ACC NR: AP6021673

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phosphates, while the fungicidal activity of the phosphates is two to three times lower than the activity of the corresponding dithiophosphoric acid derivatives. The research on fungus activity was done by N. M. Golyshin, M. F. Zuboy, and N. C. Ukrainets. The statistics on bacteria activity were done by G.N. Porshin and S. N. Milovanova. Orig. art. has: 2 tables. [JPRS]

SUB CODE: 07, 06 / SUBM DATE: 11Feb65 / ORIG REF: 008 / OTH REF: 001

Card 2/2 LS

FAL'KOVSKIY, V.B.; NURMUKHAMEDOVA, R.A.; GLAZOVA, T.I.; YELEPINA, L.T.; L'VOV, S.V.

Preparation of carboxylic acids by one-stage oxidation of polymethylbenzenes in bubble columns. Izv.vys.ucheb.zav.; khim. i khim. tekh. 7 no. 1:122-126 '64. (MIRA 17:5)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii im. M.V.Lomonosova, kafedra tekhnologii osnovnogo organicheskogo sinteza.

KLIMENOK, B.V.; KONDRAT'YEV, A.A.; Prinimali uchastiye: BASYROVA, Z.V.; YELEPINA, V.I.; ZEMLYANSKIY, A.T.; PIRKIS, L.N.; STARTSEVA, T.K.; YANTSEN, Ya.Ya.

Counter-current horizontal extractor for processing hard materials. Izv. vys. ucheb. zav.; neft' i gaz 4 no.2:75-77 '61. (MIRA 15:5)

(Paraffins) (Diesel fuels)

~~YELESEYEV, K.M.~~

MACHUL'SKII, S. N.; KHUDYAKOV, M. A.; ELESEYEV, K. M.

Agricultural Chemicals

Use of cinders as a filler in hexachlorane dust. Veterinariia. 29, no. 10, 1952.

Monthly List of Russian Accessions, Library of Congress, December 1952. Unclassified.

ACCESSION NR: [illegible]

SOURCE Ref. zh. Biol. Sv. 6., Abs. [illegible]

ACCESSION NR: AR4039975

[illegible]

[illegible]

SUB CODE: LS ENCL: 00

Card 2/2

FURLYBAYLO, F.V., doktor med.nauk; YELESHIN, Yu.N.

Use of cadaveric bone marrow for therapeutic purposes. Probl. gemat. i perel. krovi no.2:51 '65. (MIRA 18:12)

1. Klinika fakul'tetskoy terapii (nachal'nik - prof. V.A. Beyyer) Voyenno-meditsinskoy ordena Lenina akademii imeni Kirova, Leningrad.